DEPARTMENT OF THE INTERIOR

Fish and Wildlife Service

50 CFR Part 17

RIN 1018-AB42

Endangered and Threatened Wildlife and Plants; Final Rule To List the Ouachita Rock-Pocketbook (Mussel) as an Endangered Species

AGENCY: Fish and Wildlife Service, Interior.

ACTION: Final rule.

SUMMARY: The U.S. Fish and Wildlife Service (Service) determines the Ouachita rock-pocketbook (mussel) (*Arkansia* (—*Arcidens*) *wheeleri*), to be an endangered species under the authority of the Endangered Species Act of 1973 (Act), as amended. This species once inhabited the Kiamichi River in Oklahoma, the Little River in southwestern Arkansas, and the Ouachita River in central Arkansas. Presently, it is known to survive only in an 80-mile reach of the Kiamichi River upstream from Hugo Reservoir in Oklahoma and a 5-mile segment of the Little River in southwestern Arkansas. The species' range has been seriously reduced by the construction of reservoirs, water quality degradation, and other impacts to its habitat. Owing to the species' limited distribution, any factors that adversely modify habitat or water quality in these stream segments could further reduce the species and the habitat it occupies. This rule implements the protection and recovery provisions afforded by the Act for this mussel. Critical habitat is not being designated.

EFFECTIVE DATE: November 22, 1991.

ADDRESSES: The complete file for this rule is available for inspection, by appointment, during normal business hours at the Ecological Services Field Office, U.S. Fish and Wildlife Service, 222 South Houston, suite A, Tulsa, Oklahoma 74127.

FOR FURTHER INFORMATION CONTACT: David Martinez at the above address (918/581-7458 or FTS 745-7458).

SUPPLEMENTARY INFORMATION:

Background

The Ouachita rock-pocketbook, previously known as Wheeler's pearly mussel, was originally described as *Arkansia wheeleri* by Ortmann and Walker (1912), who established the monotypic genus *Arkansia* to contain *A. wheeleri*. The species was subsequently placed in the genus *Arcidens* by Clarke (1981). While it is undoubtedly related to the rock-pocketbook, *Arcidens confragosus*, the Service is following Turgeon *et al.* (1988) in retaining it in the monotypic genus *Arkansia* in this final rule. Turgeon *et al.* (1988) comprise a committee set up to standardize common and scientific names for molluscs. Their findings have been approved by the American Fisheries Society, the Council of Systematic Malacologists, and the American Malacological Union.

The Ouachita rock-pocketbook's shell is quadrate-ovate or subcircular, truncated posteriorly, subinflated, up to 110 millimeters (mm) (4.3 inches) long, 73 mm (2.9 inches) high, and 48 mm (1.9 inches) wide, moderately heavy, somewhat thickened anteriorly, up to 6 mm (0.24 inches) thick, and half as thick posteriorly. The umbos (beaks) are prominent. The periostracum is chestnut-brown to black with a silky luster. The shell has a well-defined lunule depression. There is heavy sculpturing only on the posterior half of the shell, and the beak sculpturing is barely perceptible. The shell has well-developed hinge teeth, of which the anterior left pseudocardinal and right pseudocardinal are both curved and parallel to the lunule; the posterior left pseudocardinal joins a strong, distinctive, interdental projection. The external membrane of the outer demibranch is openly porous, like a loosely-woven net. Little is known of the Ouachita rock-pocketbook's life history, and the glochidia are unknown (Branson 1983, Clarke 1981).

Ortmann and Walker (1912) designated the type locality as "Old River, Arkadelphia, Arkansas." Wheeler (1918) described the type locality as a series of oxbows connected to the Ouachita River, north of Arkadelphia, Clark County, Arkansas. Wheeler gave the Ouachita River as another locality inhabited by *A. wheeleri*, but stated it was rare in that area. Ortmann (1921) and Isely (1925) reported specimens being collected in the Kiamichi River, Pushmataha County, Oklahoma, near Antlers and Tuskahoma, respectively. Few other records were reported until recently.

Valentine and Stansbery (1971) reported the mussel from the Kiamichi River at Spencerville Crossing, Choctaw County, Oklahoma, a site since flooded by Hugo Reservoir. Johnson (1980) and Clarke (1981) added two additional localities by surveying museum specimens: Little River, White Cliffs, Little River County, Arkansas; and the Kiamichi River 1.9 kilometers (1.2 miles) south of Clayton, Pushmataha County, Oklahoma. Harris and Gordon (1987) found several empty shells on the Little River, 2.0 kilometers (1.25 miles) west of Arkansas Highway 41 and 6.4 kilometers (4.0 miles) northwest of the U.S. Highway 59 and 71 crossing of Millwood Reservoir, Little River County-Sevier County border, Arkansas. They also found relict shells on the Ouachita River near the mouth of Saline Bayou in Clark County and at Malvern, Hot Spring County, Arkansas. A single valve of this species was found in an archaeological site in Jackfork Valley, Pushmataha County, Oklahoma (Bogan and Bogan 1983).

Living populations have been found recently only in the Kiamichi River (estimated to be about 1,000 individuals) from the extreme southwestern corner of LeFlore County to Antlers, Pushmataha County, Oklahoma (Oklahoma Natural Heritage Inventory 1989); and in the Little River (less than 100 individuals) from the Oklahoma-Arkansas border 8 kilometers (5 miles) east along the border of Little River and Sevier Counties, Arkansas (Clarke 1987). In a survey of the Kiamichi River, Mehlhop-Cifelli and Miller (1989) documented the Ouachita rock-pocketbook in a 50-kilometer (30-mile) stretch of the river not previously known to be inhabited, for a total range in the Kiamichi River of 130 river-kilometers (80 river-miles). The Ouachita rock-pocketbook has occurred in very low densities at all documented sites.

Surveyors have recently examined other sites for mussels but found no *A. wheeleri* at any other locality. The species has apparently been eliminated from the Ouachita River, the lower Kiamichi River, and the lowermost Little River. Beyond the records discussed, it has not been found in other portions of the streams it inhabits, nor in any other streams or waters, including tributaries (Valentine and Stansbery 1971; Clarke 1987; Harris and Gordon 1987; Charles M. Mather, University of Science and Arts of Oklahoma, *in litt.*, 1990).

Little is known about the habitat requirements of the Ouachita rock-pocketbook. Historically, it has been found in muddy or rocky substrate, in stream-side channels and backwaters with little or no flow, and near riffles. Mehlhop-Cifelli and Miller (1989) found that backwater areas in the Kiamichi River were usually next to sand/gravel/cobble bars that either were scoured clean or supported emergent aquatic vegetation. They also found *A. wheeleri* in pools with rock substrate. Vaughnn (1991) found *A. wheeleri* to be more abundant in pools than in backwaters and to prefer a stable substratum containing a mixture of cobble and gravel. Backwaters inhabited by *A. wheeleri* had a substratum of gravel and

sand. She also reported that *A. wheeleri* always occurred within large mussel beds containing a diversity of mussel species.

Little is known about the life history of the species. However, the most closely related species, *Arcidens confragosus*, is a long-term breeder, becoming gravid in the fall and releasing glochidia (larvae) in the spring. The glochidia attach to the fins, tail, or scales of fish. The fish hosts of *Arcidens confragosus* include the American eel, gizzard shad, rock bass, white crappie, and freshwater drum (Clarke 1981).

Arkansia wheeleri (known then as Wheeler's pearly mussel) was included in a Service review of 61 species of snails, mussels, and crustaceans announced October 17, 1974 (39 FR 37078), to determine whether classification as endangered or threatened species might be appropriate. As a result of a status survey by Landye (1980) and other information reviewed by the Service, *A. wheeleri* was subsequently included in the May 22, 1984, Review of Invertebrate Wildlife for Listing as Endangered or Threatened Species (49 FR 21664) as a Category 2 species. Category 2 comprises taxa for which information indicates that proposing to list the taxa as endangered or threatened is possibly appropriate, but for which conclusive data on biological vulnerability and threats are not currently available to support proposed rules. Additional information on the species was obtained through a status survey by Clarke (1987) and other studies received by the Service (e.g., Harris and Gordon 1987). In the January 6, 1989, Animal Notice of Review (54 FR 554), *A. wheeleri* was moved to Category 1, which comprises taxa for which the Service currently has substantial information to support the biological appropriateness of proposing to list the taxa as endangered or threatened. Further information was obtained through a study of the Kiamichi River population (Mehlop-Cifelli and Miller 1989) and in response to pre-proposal letters of inquiry sent to interested parties on March 15, 1989. A proposed rule to list this species as endangered was published on July 23, 1990 (55 FR 29865).

Summary of Comments and Recommendations

In the July 23, 1990, proposed rule and associated notifications, all interested parties were requested to submit factual reports or information that might contribute to the development of a final rule. The comment period originally closed on September 21, 1990, but was reopened from November 14, 1990, to December 4, 1990 (55 FR 43390), to allow individuals to submit comments after the public hearing. Appropriate Federal agencies, State agencies, county governments, scientific organizations, and other interested parties were contacted and requested to comment. Newspaper notices inviting public comment were published in the Daily Oklahoman on August 10, 1990; the Tulsa World on August 12, 1990; the Hugo Daily News on August 9, 1990; the Arkansas Democrat on August 8, 1990; the Arkansas Gazette on August 10, 1990; and the DeQueen Daily Citizen on August 7, 1990. Copies of the proposed rule were also sent to the Antlers American, Broken Bow News, McAlester News-Capital & Democrat, McCurtain Daily Gazette, and Southeast Times. Comment letters were received from 24 entities and are discussed below.

On August 24, 1990, the Service received a written request for a public hearing from Mr. Bill Rowton, City Manager, Antlers, Oklahoma. A public hearing was scheduled for November 19, 1990, in Antlers, Oklahoma. Interested parties were contacted and notified of the hearing, and a notice of the hearing was published in the **Federal Register** on October 29, 1990 (55 FR 43390).

A total of about 179 people attended the hearing. A transcript of this hearing is available for inspection (see **ADDRESSES**). Comments received in the hearing are also summarized below.

A total of 24 written comments were received at the Ecological Services Field Office in Tulsa, Oklahoma: 11 supported the proposed listing; 9 opposed the proposed listing; and 4 either commented on information in the proposed rule but expressed neither support nor opposition, provided additional information only, or were non-substantive or irrelevant to the proposed listing.

Additional oral or written statements were received from 37 parties at the hearing: 2 supported the proposed listing; 23 opposed the proposed listing; and 12 neither supported nor opposed the proposed listing or were non-substantive or irrelevant to the proposed listing. In addition, a petition opposing the listing and bearing approximately 3,036 signatures was received at the public hearing.

Comments were received from 10 Federal and State agencies and officials, 13 local officials, and 46 private organizations, companies, and individuals. Written comments and oral statements presented at the public hearing and received during the comment periods are addressed in the following summary. Comments of a similar nature are grouped into a number of general issues. These issues, and the Service's response to each, are discussed below.

Issue 1: Additional Localities. Several commenters suggested that the Ouachita rock-pocketbook occurs in waters beyond those identified in the proposed rule, including tributaries and ponds. Response: *Arkansia wheeleri* has not been collected from tributaries to the Kiamichi River. These tributaries generally do not contain habitats suitable for the Ouachita rock-pocketbook. The Kiamichi River downstream of Jackfork Creek, suggested by one commenter as containing the Ouachita rock-pocketbook, has been surveyed recently and is inhabited by this species downstream to Antlers, Oklahoma, as stated in this rule. Surveys indicate that the Ouachita rock-pocketbook has been eliminated from the Kiamichi River downstream of Antlers, primarily by construction of Hugo Reservoir. Surveys of the Little River upstream of Pine Creek Reservoir, downstream of Pine Creek Reservoir, and various tributaries of the river, indicate that the portion of the Little River inhabited by the Ouachita rock-pocketbook has been reduced to an 8-kilometer (5-mile) segment in Arkansas. Ponds and reservoirs do not offer suitable habitat for this species, although certain other mussel species are adapted to such bodies of water. The recent distribution of the Quachita rock-pocketbook, as described (see Background, above), is based on extensive mussel surveys both inside and outside of the historical range for the species. No available data indicate that important localities for the species remain in other areas. Commenters did not provide specific data on occurrence of the Ouachita rock-pocketbook in additional waters. The Service would appreciate receiving any additional distribution data on this species. However, the potential discovery of unknown populations, unless very extensive, would not offset the loss of *A. wheeleri* from the Ouachita River, lower Kiamichi River, and lower Little River.

Issue 2: Documented Range. One commenter suggested that the species' net range has not decreased, based on discovery in 1989 of Ouachita rock-pocketbook mussels in a 50-kilometer (30-mile) segment of the Kiamichi River not previously known to be inhabited. Response: In reviewing the status of the Ouachita rock-pocketbook, the Service has considered not only the upper Kiamichi River but also reductions in

habitat throughout the mussel's overall range. Despite the cited discovery, the Ouachita rock-pocketbook appears to have been eliminated from at least 30 kilometers (20 miles) of the Kiamichi River, 55 kilometers (35 miles) of the Little River, and 50 kilometers (32 miles) of the Ouachita River. In addition, the 1989 discovery augments the most secure Ouachita rock-pocketbook population (the Kiamichi River population), whereas losses on the Ouachita River and Little River represent the complete loss of one population and a major reduction of another. Loss of multiple viable populations is detrimental to a species because of reduced genetic diversity and increased vulnerability to localized threats.

Issue 3: Abundance. Several commenters suggested that the Ouachita rock-pocketbook is more abundant than indicated in the proposed rule. One commenter cited a recent study finding the mussel in a broader range of habitats and with a greater reproductive potential than previously known.

Response: Due to the difficulty of identifying mussel species, it is likely that many people have mistaken more common mussel species for the Ouachita rock-pocketbook. The Kiamichi River supports a diverse mussel fauna of more than 25 species, several of which are common to abundant. Scientists studying the Ouachita rock-pocketbook have consistently found it to be a rate species. Although scientists recently discovered the Ouachita rock-pocketbook in certain pool habitats and indicated that it has a greater reproductive potential than previously thought, they still considered the species to be rare.

Issue 4: Natural Rarity. Several commenters accepted the fact that the Ouachita rock-pocketbook is rare, but suggesting that it is not declining from historical abundance and does not warrant an endangered status. One commenter cited a recent study finding that age structure of the population, as reflected in recent Ouachita rock-pocketbook shells, did not appear to have changed from that indicated by older shells.

Response: The referenced study dealt with Ouachita rock-pocketbooks in the Kiamichi River only, which the Service recognizes as a healthy population. Concern about the Ouachita rock-pocketbook largely results from elimination and reduction of populations from other major portions of the species' historic range. This loss of populations, coupled with natural rarity and continued threats, supports endangered status for the Ouachita rock-pocketbooks.

Issue 5: Survey Methods. Several commenters questioned various methods and assumptions used in surveys of the mussel. Some commenters questioned restriction of the most recent studies to the main stem of the Kiamichi River.

Response: Surveys for the Ouachita rock-pocketbook and other mussels, both within and outside the complete historical range of *A. wheeleri*, have been used to identify the species' current distribution. The most recent studies have provided additional biological information on this species from the only river system where a substantial, healthy population remains.

One commenter noted reservations stated in one study regarding effectiveness of an aerial photograph survey method and a pool sampling method.

Response: The methods noted were supplemental methodologies and ample data were produced from other methods and a source to support the listing action.

One commenter suggested that survey areas had experienced drought conditions and that such conditions resulted in a incorrect indication of the mussel's normal occurrence.

Response: The surveys for *A. wheeleri* encompassed periods of high flow as well as low flow. The Service believes that the various river conditions experienced during the surveys did not prevent an accurate determination of the mussel's status, using the study procedures employed.

Several commenters suggested that mussels hibernate during winter months and were thus underestimated by winter surveys.

Response: The Service knows of no scientific studies indicating that unionid mussels retreat to less accessible habitats to undergo winter hibernation. Furthermore, virtually all surveys conducted on the Ouachita rock-pocketbook were performed at times other than winter.

One commenter took issue with information related in one study that catfish were no longer fished below Sardis Dam. The commenter interpreted the statement to mean that catfish are a host for glochidia of the Ouachita rock-pocketbook. The commenter also produced evidence of successful fishing for catfish below Sardis Dam, and implied, therefore, that other aspects of the study were not reliable. Response: The subject account does not indicate catfish to be hosts for glochidia of the Ouachita rock-pocketbook. Furthermore, the statement is clearly identified by the study authors as hearsay information obtained from local residents. It is not comparable to the study's essential results and conclusions, which were obtained using scientific procedures, direct observations by qualified biologists, and careful analysis and interpretation.

Issue 6: Identified Threats. Several commenters questioned the existence of evidence identifying various factors as threats to the Ouachita rock-pocketbook. One commenter questioned that bridge building constituted a threat to the mussel, and another questioned the effect of human activities other than dam building. Some commenters alleged that environmental quality had actually improved under current land practices and pollution controls, over conditions found in the past.

Response: Evidence of threats is partly provided by the statements of survey scientists, drawing on their observations of conditions in the field as well as their professional judgement. Other evidence is provided by a known potential for various human activities to produce environmental modifications far beyond the conceivable tolerances of the Ouachita rock-pocketbook. Further evidence is provided by experiences with other mussel species in which the impact of particular factors has been indicated by strong circumstantial evidence or has been well established through intensive study. Barring contrary evidence, the Service believes that available evidence is sufficient to implicate the factors identified as existing and potential threats. Despite some impressions of improved conditions, the available evidence indicates that dam construction and water pollution from various sources have greatly diminished suitable habitat for the Ouachita rock-pocketbook (see Summary of Factors Affecting the Species, below).

One commenter questioned the importance of the Asiatic clam, *Corbicula fluminea*, as a threat to the Ouachita rock-pocketbook. The commenter stated there is no clear-cut evidence that *Corbicula* seriously impacts any mussel population.

Response: Corbicula fluminea is identified as a potential threat based on concerns expressed by a number of scientists regarding that species. Since its introduction, *C. fluminea* has spread rapidly through the river systems of North America and is found in the river systems inhabited by the Ouachita rock-pocketbook. It is environmentally tolerant and quite prolific, producing tremendous populations under favorable conditions. Increases in numbers to the

point of displacing native mussel species from their habitats, competing for food, or causing other adverse effects have not yet been documented. Nevertheless, because of the concerns expressed by some biologists, the Service believes that *C. fluminea* warrants identification as a potential threat that should be evaluated as populations have further opportunity to develop in the range of the Ouachita rock-pocketbook.

Issue 7: Predation. Some commenters suggested that predation by raccoons, otters, herons, and other predators might be a factor affecting the Ouachita rock-pocketbook. Some implied that listing of the mussel was contradicted by efforts of the Oklahoma Department of Wildlife Conservation to reintroduce the river otter, a known predator of mussels, to streams of eastern Oklahoma.

Response: River otters, raccoons, muskrats, and certain other predators regularly consume a large number of mussels along with other aquatic and terrestrial organisms. For that portion of their diets consisting of mussels, the large majority of individuals consumed would be members of species more common than the Ouachita rock-pocketbook. The river otter was once a natural component of the riverine ecosystems of eastern Oklahoma and Arkansas, and apparently coexisted with the Ouachita rock-pocketbook before settlement, without eliminating that species. The Service does not have data indicating that predation by river otters or other predators (1) has been enhanced above natural levels by anthropogenic factors, (2) has played a role in reduction of the mussel's range, or (3) constitutes a present or future threat to the Ouachita rock-pocketbook. However, listing of the Ouachita rock-pocketbook would increase the likelihood of studying predator effects on the mussel and, if determined to be significant, of influencing State wildlife management programs affecting predator populations. Finally, identification of predation as a threat to the mussel would strengthen the evidence for listing the Ouachita rock-pocketbook, rather than weaken it.

Issue 8: State Protection. One commenter asked on behalf of an Oklahoma State Legislator if provision for increased protection of the Ouachita rock-pocketbook through amendment of Oklahoma's State endangered species act would remove the need for Federal listing.

Response: Inadequacy of existing regulatory mechanisms is one of five factors considered in the listing of a species. Because section 4(a)(D) of the Act specifies existing mechanisms, protections that might be provided through future mechanisms cannot be considered in a pending listing action. Furthermore, existing mechanisms would be considered an adequate substitute for Federal listing only if they provided a reasonably certain means of improving the species' status, and effectively removed the other factors qualifying the Ouachita rock-pocketbook for Federal listing. Benefits provided to the species under the Endangered Species Act include recognition, recovery actions, requirements for Federal protection, and prohibitions against many harmful activities (See Available Conservation Measures, below). These benefits will apply to populations of the Ouachita rock-pocketbook both in Oklahoma and Arkansas.

Issue 9: Sufficiency of Information. A number of commenters questions the sufficiency of Service information supporting the listing. Many of these and other commenters suggested further study of the mussel as an alternative course of action.

Response: Section 4(b)(6) of the Act requires that listing determinations be made within one year of the proposal. The Service is required to make listing decisions solely on the basis of the best scientific and commercial data available. The Service can postpone listing if substantial disagreement exists among experts regarding the sufficiency or accuracy of available data on the status of the species. No such disagreement exists for the Ouachita rock-pocketbook. The Service has carefully reviewed the status of the Ouachita rock-pocketbook and believes that available information fully supports immediate listing of the species.

Some commenters pointed to placement of the Ouachita rock-pocketbook under two different generic names by different biologists as an indication of inadequate knowledge about the species and a lack of agreement within the scientific community.

Response: Many species have experienced changes in scientific nomenclature. Past changes in taxonomy of the mussel have simply represented different researchers' views on the phylogenetic relationship of the Ouachita rock-pocketbook to another mussel species. There is no question that the Ouachita rock-pocketbook is a distinct species, and the difference in names used has no bearing on the species' status. All biologists familiar with the Ouachita rock-pocketbook agree, in fact, that the species should be listed as endangered.

Several commenters suggested that insufficient information was available on the species' distribution, its microhabitat preferences, environmental tolerances, reproduction, host species, and other biological aspects, for the listing to proceed.

Response: The Service believes that surveys to confirm the species' current distribution and abundance have provided adequate information to support the listing. The Service also believes it has sufficient information to identify principal threats. Scientists have generally identified the habitats occupied by the species, its reproductive potential, and population characteristics within the Kiamichi River. The Service believes it is possible to determine that a species is endangered or threatened on the basis of its documented decline and evidence of threats, without knowing all details of its habitat needs for life history. Once the Service has sufficient information to make the essential determinations, there is no reason to delay a listing decision in order for additional information to be obtained. The Service must make a determination on the basis of the best available scientific and commercial information. All available information has been used in developing the final rule. Collection of additional information regarding unknown or inadequately known aspects of the mussel's biology will be important to conservation of the species. Ongoing studies noted by some commenters will provide some of this information. Other needed information will be obtained through future studies, which will be made possible through Federal listing of the species.

Issue 10: Critical habitat. One commenter questioned whether critical habitat was not being designated to avoid compensating landowners for loss of property value.

Response: Critical habitat is not being designated because it is not considered prudent. After taking into account potential risks and benefits, the Service believes designation of critical habitat would have a net adverse effect on the species (see Critical Habitat, below). The Endangered Species Act provides no means of compensating landowners for devaluations, if any, of property designated as critical habitat. Economic impact provisions permit areas to be considered for exclusion from critical habitat if the benefits of exclusion outweigh the benefits of designation, so long as such exclusion will not result in extinction of the species concerned.

Issue 11: Future Actions. One commenter asked what would be the next step in the Service's process and how long before a ruling would be made.

Response: Following closure of the public comment period, the Service's next step was to consider the best available scientific and commercial information, which has resulted in this final rule. The Act requires that, within one year of publishing a proposed rule, the Service must publish a final rule, withdraw the proposed rule, or extend the proposed rule for up to six months, because of substantial disagreement regarding the sufficiency or accuracy of the available data.

Some commenters asked about actions that occur following listing and whether species were ever removed from Federal lists.

Response: Following listing, the Act provides for recognition, recovery actions, requirements for Federal protection, and prohibitions against certain practices (see Available Conservation Measures, below). Listing provides means by which the Service and other parties can seek to improve the status of species. The objective of these efforts is to recover the species so that they no longer require the protections of the Endangered Species Act. Through updated status reviews, species can and have been removed from the list of endangered and threatened species for reasons of recovery, extinction, and original data in error.

Issue 12: Translocation. Some commenters suggested translocation of the mussel as an alternative action to listing.

Response: Translocation might be determined to be a desirable conservation action but could be recommended only after further research on the species. Research on this or other conservation strategies is one of the benefits that will be provided by listing of the species. However, to offer a potential for improving the species' status, translocation would require that suitable unoccupied habitat be available. This could present a problem, since without evidence of other factors, it would be necessary to assume that unoccupied habitats are unsuitable for the Ouachita rock-pocketbook for one or more reasons. Aside from these considerations, translocation alone would not improve the species' status or reduce threats enough to make listing unnecessary.

Issue 13: Social and Economic Impacts. A number of commenters expressed concerns regarding potential effects of listing the Ouachita rock-pocketbook on general socioeconomic conditions or specific types of public and private activities.

Response: The Service is required to base decisions regarding endangered or threatened status solely on biological considerations and is prohibited from allowing economic or other nonbiological factors to affect such decisions. However, the actual extent and limits of listing effects on socioeconomic conditions are usually not as great as many people fear. Only activities involving the Federal government must undergo additional evaluation with respect to potential effects on the Ouachita rock-pocketbook. Federal agencies will be required to consult with the Service if they propose to authorize, fund, or carry out any activities that may affect the Ouachita rock-pocketbook. Through consultation, these agencies will determine whether and in what manner they can carry out their activities consistent with the jeopardy provision of section 7(a)(2) of the Act. Experience has shown that, in most cases, such consultation results in minor modifications to the activities, rather than major modifications or irresolvable conflicts. Furthermore, although some federally involved activities would have a reasonable potential to affect the mussel (e.g., dams, hydropower facilities, bridges, pipeline crossings, gravel operations, wastewater discharges), other Federal actions would have little potential to directly affect the species (e.g., Federal loan programs, upland developments). Other activities by individuals, private entities, local governments, or state governments that do not involve Federal agencies would be affected only by the Act's prohibitions against take of the species and other practices (see Available Conservation Measures, below).

Issue 14: Purpose of the rule. One commenter stated that listing of the mussel was not justified as a means to stop construction of Tuskahoma Dam.

Response: Species are listed on the basis of biological information and not for the purpose of affecting any activity or project. As stated above, listing of the Ouachita rock-pocketbook would not create an absolute prohibition against building of dams but simply a requirement for federally involved dams and other projects potentially affecting the mussel to be evaluated through particular procedures to ensure compliance with the Act.

Issue 15: Importance of Endangered Species. A number of commenters questioned the importance and/or feasibility of removing impacts to endangered species, or the importance of listing or conserving endangered species in general.

Response: In passing the Endangered Species Act, Congress has declared that all Federal departments and agencies shall seek to conserve endangered and threatened species because "these species of fish, wildlife, and plants are of esthetic, ecological, educational, historical, recreational, and scientific value to the Nation and its people." The listing process is one of the Act's fundamental methods to scientifically and objectively provide for conservation of endangered and threatened species. Listing of species is a means of determining the status of those species and is not constrained by the feasibility or prospect of recovering the species. Results seen with a number of species indicate that existing and potential threats can be feasibly reduced through the protections provided by the Act. The Service believes that an active recovery program for the Ouachita rock-pocketbook will substantially augment numbers to a point where extinction is far less probable than indicated by recent trends.

Issue 16: Wetland Protection and Land Controls. Some commenters asked if the Endangered Species Act was connected with Service initiatives to protect wetlands, such as those identified in the Region II Wetlands Regional Concept Plan, prepared under the Emergency Wetlands Resources Act.

Response: There is no deliberate connection between the Endangered Species Act and Service efforts to protect wetlands, although the two may coincide if particular wetlands are habitat for endangered or threatened species. Habitat protections provided by the Act would apply to wetlands if those areas are important to the conservation of listed species. However, other means are available and are used by the Service to protect wetlands, whether or not they are inhabited by listed species.

Some commenters asked if the Service would seize land along the Kiamichi River without due compensation to property owners.

Response: The Service does not condemn lands for endangered species habitat, wetland protection, or other purposes, except under highly unusual circumstances; in those rare instances, the Service is required to pay fair market value.

One commenter asked if the Endangered Species Act is a form of land use legislation.

Response: The Act provides means for conserving ecosystems upon which endangered or threatened species depend. The Act does not restrict use of lands to particular purposes or activities. However, if there is Federal involvement, land use must be consistent with the provisions of the Act.

Issue 17: Positions of Congressional Members. One commenter asked what Oklahoma Congressmen and U.S. Senators support the listing proposal.

Response: The Service has no indication of support from members of the Oklahoma congressional delegation. In past contacts with staff of former Congressman Wes Watkins' office, no objection to the listing was made. Current District 3 Congressman Bill Brewster's office has expressed opposition to the listing until additional studies are performed.

Issue 18: Notification and Hearing. Some commenters complained that notification of the proposed rule was inadequate.

Response: Steps taken by the Service to notify the public of the proposed rule are summarized at the beginning of this section. These steps fully met or surpassed the requirements of the Administrative Procedure Act and the Endangered Species Act for public notification.

One commenter requested a postponement of the public hearing.

Response: The Service arranged the hearing in coordination with local officials and attempted to avoid obvious conflicts in selecting a date. However, it is virtually impossible to schedule public meetings at a time that is convenient for everyone. The hearing was held as scheduled and was well attended. The public comment period was reopened for 21 days, providing further opportunity to comment for any interested parties unable to attend the hearing.

Issue 20: Some commenters expressed concern about trespass on private property.

Response: Service personnel and biologists conducting status surveys for the Service consistently obtained permission to cross property or used public access points to perform field work for the mussel. Service policy prohibits ingress on private property without the landowner's permission.

Summary of Factors Affecting the Species

After a thorough review and consideration of all information available, the Service has determined that the Ouachita rock-pocketbook should be classified as an endangered species. Procedures found at section 4(a)(1) of the Endangered Species Act (16 U.S.C. 1531 *et seq.*) and regulations (50 CFR part 424) promulgated to implement the listing provisions of the Act were followed. A species may be determined to be an endangered or threatened species due to one or more of the five factors described in section 4(a)(1). These factors and their application to the Ouachita rock-pocketbook (*A. wheeleri*) are as follows:

A. The Present or Threatened Destruction, Modification, or Curtailment of Its Habitat or Range

Water quality deterioration and reservoir construction have apparently been the principal reasons for this species' precipitous decline. Reservoirs inundate stream habitats needed by most mussel species and can affect downstream habitats by cold water releases and fluctuating water levels. Colder water probably has a direct impact on mussel growth by reducing metabolic rates (Mehlhop-Cifelli and Miller 1989). Reservoir alterations can also decrease nutrients and reduce fish host availability for glochidia (Mehlhop-Cifelli and Miller 1989).

On the Ouachita River, the type locality has been severely polluted, making it unsuitable for many mussel species, including the Ouachita rock-pocketbook. The Ouachita River has also been impacted by several reservoirs. Clarke (1987) indicates these impoundments have likely contributed to the species' decline in this drainage.

On Little River, the impoundment of Pine Creek Reservoir (1969), hypolimnetic releases from Pine Creek Dam, periodic pollution discharges into Rolling Fork, and impoundment of Millwood Reservoir (1966) have caused the loss of many mussel species, including the Ouachita rock-pocketbook, from extensive segments of the river. Water quality in Little River is so poor downstream of the confluence with the Rolling Fork [approximately 8 kilometers (5 miles) east of the Oklahoma-Arkansas state line], that *A. wheeleri* apparently does not survive there. Sewage discharges from McCurtain County, Oklahoma, and scattered gravel dredging operations affect water quality in the remaining segment of Little River where this mussel is found. The Little River population is also potentially threatened by hypolimnetic releases from Broken Bow Reservoir (impounded in 1968) in McCurtain County, Oklahoma.

The lower reach of the Kiamichi River, formerly inhabited by the Ouachita rock-pocketbook, has been impounded by Hugo Reservoir (1974). The authorized Tuskahoma Reservoir, if constructed, would inundate upper reaches of the river inhabited by the Ouachita rock-pocketbook and affect the remaining population and its habitats downstream of the reservoir. The proposed addition of hydropower at Sardis Reservoir (impounded in 1983) on Jackfork Creek (a tributary of the Kiamichi River, Pushmataha County, Oklahoma) would also be a threat to this mussel.

Gravel is being mined at sites on the Kiamichi River, where *A. wheeleri* occurs. Bridge construction upstream of another site on the Kiamichi River has caused considerable siltation (Mehlhop-Cifelli and Miller 1989), which adversely affects this species. Elevated levels of mercury have been found in fish samples from the Kiamichi River near Big Cedar, Oklahoma (EPA, *in litt.*, 1989). The source of this mercury is presently unknown but could pose a serious threat to the continued survival of this species.

B. Overutilization for Commercial, Recreational, Scientific, or Educational Purposes

This rare species occurs in such low numbers that removal by private collectors and scientists poses an additional threat. Its rarity and unusual shell features make it a desirable species for private collectors. Considering the historic rarity of this species and significant loss of its historic habitat, the collection of live specimens could result in the loss of a significant portion of the surviving populations.

C. Disease or Predation

Although the Ouachita rock-pocketbook is undoubtedly consumed by predatory animals, there is no evidence that predation threatens the species' continued existence. Disease is not an apparent threat.

D. The Inadequacy of Existing Regulatory Mechanisms

The State of Oklahoma lists the Ouachita rock-pocketbook as a State endangered species, but this listing does not provide habitat protection. The State of Arkansas provides no special protection for the species or its habitat. The Act would provide additional protection and encourage active management through "Available Conservation Measures" discussed below.

E. Other Natural or Manmade Factors Affecting Its Continued Existence

The exotic Asiatic clam (*C. fluminea*) occurs in Hugo Reservoir and portions of the Kiamichi River, and the population is moving slowly upstream (Charles M. Mather, *in litt.*, 1989). This environmentally adaptive and tolerant mollusk may adversely impact the Ouachita rock-pocketbook and other native mussel fauna. In addition, low Ouachita rock-pocketbook densities

make the fertility and breeding success of this species susceptible to any factors that reduce existing populations.

The Service has carefully assessed the best scientific and commercial information available regarding past, present, and future threats faced by this species in determining to make this rule final. Based on this evaluation, the preferred action is to list the Ouachita rock-pocketbook (*A. wheeleri*) as endangered. Historic records reveal that while the species has always been extremely rare, it was once considerably more widespread than it is today. At most, only two small populations are known to survive. These populations are threatened by a variety of factors including reservoir construction, cold water releases, stream alteration, and pollution. Owing to the species' history of population losses and the vulnerable nature of remaining populations, threatened status does not appear appropriate. A decision to take no action would exclude the Ouachita rock-pocketbook from needed protection available under the Act. Therefore, no action or listing as threatened would be contrary to the Act's intent. Critical habitat is not being designated for the Ouachita rock-pocketbook for reasons discussed below.

Critical Habitat

Section 4(a)(3) of the Act requires that, to the maximum extent prudent and determinable, the Secretary of the Interior designate critical habitat at the time a species is determined to be endangered or threatened. The Service finds that designation of critical habitat is not presently prudent for the Ouachita rock-pocketbook. Loss of even a few individuals to collectors and vandals could have a severe impact on the survival of the species. Listing of *A. wheeleri* is opposed by many local citizens. Clams and mussels are filter feeders and very susceptible to a wide variety of pollutants, such as certain pesticides and other chemicals. The sensitivity of mussels to introduced toxins makes *A. wheeleri* particularly vulnerable to vandalism. Publication of critical habitat descriptions and maps would increase the vulnerability of the species to collectors and vandals without significantly increasing protection. Therefore, it would not now be prudent to determine critical habitat for the Ouachita rock-pocketbook.

Available Conservation Measures

Conservation measures provided to species listed as endangered or threatened under the Endangered Species Act include recognition, recovery actions, requirements for Federal protection, and prohibitions against certain practices. These measures are discussed, in part, below.

Recognition through listing encourages and results in conservation actions by Federal, State, and private agencies, groups, and individuals. A recovery plan will be developed following listing of the Ouachita rock-pocketbook as an endangered species. This plan will draw together State, Federal, and local agencies having responsibility for conservation of *A. wheeleri*. The recovery plan will outline an administrative framework, sanctioned by the Act, for agencies to coordinate their activities and cooperate to prevent the extinction of this species and to enhance its recovery.

The Act also provides for possible land acquisition and cooperation with the States. Pursuant to section 6, the Service would be able to grant funds to the States of Oklahoma and Arkansas for management actions aiding the protection and recovery of the Ouachita rock-pocketbook.

Section 7(a) of the Act, as amended, requires Federal agencies to evaluate their actions with respect to any species that is proposed or listed as endangered or threatened and with respect to its critical habitat, if any is being designated. Regulations implementing this interagency cooperation provision of the Act are codified at 50 CFR part 402. Section 7(a)(2) requires Federal agencies to ensure that activities they authorize, fund, or carry out are not likely to jeopardize the continued existence of a listed species or to destroy or adversely modify its critical habitat. If a Federal action may affect a listed species or its critical habitat, the responsible Federal agency must enter into formal consultation with the Service. If through consultation, the Service determines that a Federal project is likely to jeopardize the continued existence of a listed species or result in the destruction or adverse modification of any designated critical habitat, the Service may recommend reasonable and prudent alternatives to the proposed action.

A variety of Federal agencies have jurisdiction and responsibilities potentially affecting the Ouachita rock-pocketbook, and section 7 consultation may be required in a number of instances. Federal involvement is expected to include the U.S. Army Corps of Engineers' multipurpose reservoir activities, Federal Highway Administration construction projects, Environmental Protection Agency pollution control and pesticide use programs, and U.S. Forest Service management activities on the Ouachita National Forest. The Corps of Engineers has received authorization to construct Tuskahoma Reservoir on the Kiamichi River; the dam would be located south of the town of Albion. This reach of the river and areas downstream are crucial to the recovery and survival of the Ouachita rock-pocketbook. Furthermore, the Corps of Engineers has studied the addition of hydropower at Sardis Reservoir, located on Jackfork Creek, a primary tributary of Kiamichi River near Clayton, Oklahoma. The Environmental Protection Agency would be involved with efforts to prevent water quality degradation and to approve the use of pesticides within the known range of the species. These projects and others have the potential to significantly impact Ouachita rock-pocketbook populations.

The Act and implementing regulations found at 50 CFR 17.21 set forth a series of general prohibitions and exceptions that apply to all endangered wildlife. These prohibitions, in part, make it illegal for any person subject to the jurisdiction of the United States to take (includes harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect, or to attempt any of these), import or export, ship in interstate commerce in the course of a commercial activity, or sell or offer for sale in interstate or foreign commerce any listed species. It also is illegal to possess, sell, deliver, carry, transport, or ship any such wildlife that has been taken illegally. Certain exceptions apply to agents of the Service and State conservation agencies.

Permits may be issued to carry out otherwise prohibited activities involving endangered wildlife species under certain circumstances. Regulations governing permits are at 50 CFR 17.22 and 17.23. Such permits are available for scientific purposes, to enhance the propagation or survival of the species, and/or for incidental take in connection with otherwise lawful activities.

National Environmental Policy Act

The Fish and Wildlife Service has determined that an Environmental Assessment, as defined under the authority of the National Environmental Policy Act of 1969, need not be prepared in connection with regulations adopted pursuant to section 4(a) of the Endangered Species Act of 1973, as amended. A notice outlining the Service's reasons for this determination was published in the **Federal Register** on October 25, 1983 (48 FR 49244).

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Authors

The primary authors of this final are Alan David Martinez and Sonja E. Jahrsdoerfer, U.S. Fish and Wildlife Service (see **ADDRESSES**).

List of Subjects in 50 CFR Part 17

Endangered and threatened species, Exports, Imports, Reporting and recordkeeping requirements, and Transportation.

Regulation Promulgation

PART 17—[AMENDED]

Accordingly, part 17, subchapter B of chapter I, title 50 of the Code of Federal Regulations, is amended as set forth below:

1. The authority citation for part 17 continues to read as follows:

Authority: 16 U.S.C. 1361–1407; 16 U.S.C. 1531–1544; 16 U.S.C. 4201–4245; Pub. L. 99–625, 100 Stat. 3500, unless otherwise noted.

2. Amend § 17.11(h) by adding the following, in alphabetical order under "CLAMS" to the List of Endangered and Threatened Wildlife:

§ 17.11 Endangered and threatened wildlife.

* * * * *

(h) * * *

Species		Historic range	Vertebrate population where endangered or threatened	Status	When listed	Critical habitat	Special rules
Common name	Scientific name						
Clams							
*	*	*	*	*		*	
Rock-pocketbook, Ouachita (Wheeler's pearly mussel).	*Arkansia (Arcidens) wheeleri*	U.S.A. (AR, OK),	NA	E	446	NA	NA
*	*	*	*	*		*	

Dated: September 25, 1991.

Richard N. Smith,

Acting Director, Fish and Wildlife Service.

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